WHAT IS CLAIMED IS:

1. A multi-axis accelerometer comprising:

a main structure made of electricity conductive material and including a first proof mass and a second proof mass which are connected to a frame by sensing beams, the frame fixed between two boards, the two proof masses movable only along a first axis and a second axis parallel to the boards, the two proof masses each having grooves defined in each surface thereof and the grooves being perpendicular to the first axis and the second axis, respectively;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first proof mass, each set of the electrodes electrically connected to a bond pad, so as to form two first axis detection capacitors with a surface of the first proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the second proof mass, each set of the electrodes electrically connected to a bond pad, so as to form two second axis detection capacitors with a surface of the second proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the second axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit.

2. The multi-axis accelerometer as claimed in Claim 1, wherein the main structure includes a third proof mass made of electricity conductive material and connected to the frame by a plurality of flexible sensing beams, the third proof mass movable only along a z-axis which is perpendicular to the surface of the board, and an electrode located on each board and facing the third proof mass so as to form two z-axis detection capacitors with the surfaces of the proof mass, wherein when an acceleration has a z-axis component, the capacitances of the

z-axis capacitors change and the change of the capacitances is transferred into a z-axis acceleration signal via a circuit.

3. The multi-axis accelerometer as claimed in Claim **1**, wherein the second axis sensing beam makes the second proof mass move along the second axis which is perpendicular to the boards (z-axis), and the two second axis capacitors being an electrode on a surface of each board facing the second proof mass, each surface of the second proof mass has no groove defined therein, the surfaces of the second proof mass and the electrodes forming the two z-axis detection capacitors, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors change and the change is transferred into a z-axis acceleration signal via a circuit.

4. A multi-axis accelerometer comprising:

a main structure made of electricity conductive material and including a first proof mass and a second proof mass which encloses the first proof mass, the first proof mass connected to the second proof mass by a plurality of first flexible sensing beams, the second proof mass connected to a frame by a plurality of second flexible sensing beams, the frame fixed between two boards;

the first sensing beams making the first proof mass movable only along the first axis and the second sensing beam making the second proof mass movable only along the second axis, each surface of the first proof mass having elongate grooves defined therein which are perpendicular to the first axis; each surface of the second proof mass having elongate grooves defined therein which are perpendicular to the second axis;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first proof mass and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the first proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the second proof mass and the electrodes electrically connected to two bond pads so as to form two second axis detection capacitors with a surface of the second proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the second axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit.

5. The multi-axis accelerometer as claimed in Claim **4**, wherein the second axis sensing beam makes the second proof mass move along the second axis which is perpendicular to the boards (z-axis), and the two second axis capacitors being an electrode on a surface of each board facing the second proof mass, each surface of the second proof mass has no groove defined therein, the surfaces of the second proof mass and the electrodes forming two z-axis detection capacitors, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors change and the change is transferred into a z-axis acceleration signal via a circuit.

6. The multi-axis accelerometer as claimed in Claim **4**, wherein the first axis sensing beam makes the first proof mass move along the first axis which is perpendicular to the boards (z-axis), and the two first axis capacitors being an electrode on a surface of each board facing the first proof mass, each surface of the second proof mass has no groove defined therein, the surfaces of the first proof mass and the electrodes forming two z-axis detection capacitors, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors change and the change is transferred into a z-axis acceleration signal via a circuit.

7. A multi-axis accelerometer comprising:

a main structure made of electricity conductive material and including a first proof mass and a second proof mass which encloses the first proof mass, the first proof mass connected to the second proof mass by a plurality of

first flexible sensing beams, the second proof mass connected to a frame by a plurality of L-shaped sensing beams and the frame fixed between two boards;

the first sensing beam making the first proof mass movably along z-axis which is perpendicular to the boards, the L-shaped sensing beams making the second proof mass movable along the first axis and the second axis which are parallel to the boards, two surfaces of the second proof mass having elongate grooves defined therein part of which are perpendicular to the first axis and the others are perpendicular to second axis;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves which perpendicular to the first axis in the second proof mass and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the second proof mass, wherein when the acceleration has a component along the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and in parallel with the grooves which perpendicular to the second axis in the second proof mass and the electrodes electrically connected to two bond pads so as to form two second axis detection capacitors with a surface of the second proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the second axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit.

an electrode located on a surface of each board and the surface facing the first proof mass so as to form two z-axis detection capacitors with the surfaces of the first proof mass, wherein when an acceleration having a z-axis component, capacitances of the z-axis capacitors change and the change of the value is transferred into a z-axis acceleration signal via a circuit.

8. The multi-axis accelerometer as claimed in Claim 7, wherein the first proof mass encloses the second proof mass which is connected to the first proof mass by a plurality of L-shaped flexible sensing beams, the first proof mass connected to a frame by a plurality of first sensing beams.

9. A multi-axis accelerometer comprising a main structure made of electricity conductive material and including a proof mass which is connected to a frame by several sensing beams, the frame fixed between two boards, the sensing beams making the proof mass movable only along a first axis which is parallel to the boards and a z-axis perpendicular to the boards.

10. The multi-axis accelerometer as claimed in Claim 9, wherein each surface of the proof mass include two areas, a first area having grooves perpendicular to the first axis and a second area having no grooves;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first area and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two electrodes on the two boards and located to face the second area, the electrodes electrically connected to two bond pads so as to form two z-axis detection capacitors with surfaces of the proof mass, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors change and the change is transferred into z-axis acceleration signal via a circuit.

11. The multi-axis accelerometer as claimed in Claim 9, wherein each surface of the proof mass have a plurality of grooves which are perpendicular to the first axis;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the proof mass and electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

a sum of the first axis capacitors on one board and a sum of the first axis capacitors on the other board forming two z-axis capacitors, wherein when the acceleration has a component on the z-axis, the capacitances of the

z-axis capacitors change and the change is transferred into a z-axis acceleration signal via a circuit.

12. A multi-axis accelerometer comprising:

a main structure made of electricity conductive material and including a proof mass which is connected to a frame by a plurality of L-shaped flexible sensing beams, the frame fixed between two boards, the sensing beams making the proof mass movably along a first axis and a second axis parallel to the boards, each surface of the proof mass including two areas, the first area having elongate grooves defined therein which are perpendicular to the first axis and a second area having elongate grooves defined therein which are perpendicular to the second axis;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first area and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the second area and the electrodes electrically connected to two bond pads so as to form two second axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the first axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit.

13. The multi-axis accelerometer as claimed in Claim 12, wherein the L-shaped sensing beams make the proof mass movable along the first axis and the second axis parallel to the boards, and z-axis perpendicular to the boards, each surface of the proof mass including three areas, a first area having elongate grooves perpendicular to the first axis, a second area having elongate grooves perpendicular to the second axis, a third area having no grooves;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first area and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with the surface of the proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the second area and the electrodes electrically connected to two bond pads so as to form two second axis detection capacitors with the surface of the proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the first axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit;

an electrode located on each board and facing the third area, the electrodes forming two z-axis detection capacitors with surfaces of the proof mass, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors are changed and the change is transferred into a z-axis acceleration signal via a circuit.

14. The multi-axis accelerometer as claimed in Claim **12**, wherein the L-shaped sensing beams make the proof mass movable along the first axis and the second axis parallel to the boards, and z-axis perpendicular to the boards, each surface of the proof mass including two areas, a first area having elongate grooves perpendicular to the first axis, a second area having elongate grooves perpendicular to the second axis;

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the first area and the electrodes electrically connected to two bond pads so as to form two first axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the first axis, the capacitances of the first axis capacitors change and the change is transferred into a first axis acceleration signal via a circuit, and

two sets of interposed stripe electrodes on each board and located in parallel with the grooves in the second area and the electrodes electrically

connected to two bond pads so as to form two second axis detection capacitors with a surface of the proof mass, wherein when the acceleration has a component on the second axis, the capacitances of the second axis capacitors change and the change is transferred into a second axis acceleration signal via a circuit;

a sum of the first axis capacitors and the second axis capacitors on one board and a sum of the first axis capacitors and the second axis capacitors on the other board forming two z-axis capacitors, wherein when the acceleration has a component on the z-axis, the capacitances of the z-axis capacitors change and the change is transferred into a z-axis acceleration signal via a circuit.

15. The multi-axis accelerometer as claimed in Claim **1**, wherein the acceleration signal of each axis is sent to the respective detection capacitors by feedback circuit so as to maintain the proof mass still.

16. The multi-axis accelerometer as claimed in Claim **4**, wherein the acceleration signal of each axis is sent to the respective detection capacitors by feedback circuit so as to maintain the proof mass still.

17. The multi-axis accelerometer as claimed in Claim **7**, wherein the acceleration signal of each axis is sent to the respective detection capacitors by feedback circuit so as to maintain the proof mass still.

18. The multi-axis accelerometer as claimed in Claim **9**, wherein the acceleration signal of each axis is sent to the respective detection capacitors by feedback circuit so as to maintain the proof mass still.

19. The multi-axis accelerometer as claimed in Claim **12**, wherein the acceleration signal of each axis is sent to the respective detection capacitors by feedback circuit so as to maintain the proof mass still.

20. The multi-axis accelerometer as claimed in Claim **1**, wherein the main structure is made by way of bulk micro-machining on (110) silicon chips.

21. The multi-axis accelerometer as claimed in Claim **4**, wherein the main structure is made by way of bulk micro-machining on (110) silicon chips.

22. The multi-axis accelerometer as claimed in Claim **7**, wherein the main structure is made by way of bulk micro-machining on (110) silicon chips.

23. The multi-axis accelerometer as claimed in Claim **9**, wherein the main structure is made by way of bulk micro-machining on (110) silicon chips.

24. The multi-axis accelerometer as claimed in Claim **12**, wherein the main structure is made by way of bulk micro-machining on (110) silicon chips.

25. The multi-axis accelerometer as claimed in Claim **1**, wherein the first axis and the second axis are not orthogonal, signals of the first axis and the second axis are transferred to an orthogonal coordinate.

26. The multi-axis accelerometer as claimed in Claim **4**, wherein the first axis and the second axis are not orthogonal, signals of the first axis and the second axis are transferred to an orthogonal coordinate.

27. The multi-axis accelerometer as claimed in Claim **7**, wherein the first axis and the second axis are not orthogonal, signals of the first axis and the second axis are transferred to an orthogonal coordinate.

28. The multi-axis accelerometer as claimed in Claim **10**, wherein the first axis and the second axis are not orthogonal, signals of the first axis and the second axis are transferred to an orthogonal coordinate.

29. The multi-axis accelerometer as claimed in Claim **12**, wherein the first axis and the second axis are not orthogonal, signals of the first axis and the second axis are transferred to an orthogonal coordinate.

30. The multi-axis accelerometer as claimed in Claim **1**, wherein the grooves in the main structure include a plurality of deep recesses or holes, or the grooves are replaced with slots.

31. The multi-axis accelerometer as claimed in Claim **4**, wherein the grooves in the main structure include a plurality of deep recesses or holes, or the grooves are replaced with slots.

32. The multi-axis accelerometer as claimed in Claim **7**, wherein the grooves in the main structure include a plurality of deep recesses or holes, or the grooves are replaced with slots.

33. The multi-axis accelerometer as claimed in Claim **9**, wherein the grooves in the main structure include a plurality of deep recesses or holes, or the grooves are replaced with slots.

34. The multi-axis accelerometer as claimed in Claim **12**, wherein the grooves in the main structure include a plurality of deep recesses or holes, or the grooves are replaced with slots.